

## CLAIMS

What is claimed is:

1. A method of terminating two or more  
5 constituent encoders of a turbo encoder employing a turbo  
code, the method comprising the steps of:

generating tail input bits at each of two or  
more constituent encoders, including the step of:

deriving the tail input bits from each of  
10 the two or more constituent encoders separately for each  
constituent encoder from a contents of shift registers  
within each of the two or more constituent encoders,  
after an encoding of information bits by the two or more  
constituent encoders; and

15 puncturing one or more tail output bits such  
that  $1/R$  tail output bits are transmitted for each of a  
plurality of trellis branches, wherein  $R$  is a turbo code  
rate employed by the turbo encoder during an information  
bit transmission.

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2. The method of Claim 1 wherein the step of  
puncturing the tail output bits further comprises the  
step of:

transmitting, during trellis termination, the  
25 tail output bits only if they are sent from an output  
branch of one of the two or more constituent encoders  
that is used during information bit transmission.

3. The method of Claim 2 wherein the step of  
30 transmitting comprises the steps of:

transmitting tail output bits from a first  $X(t)$   
output branch and from a second  $Y_0(t)$  output branch, when  
the turbo encoder is employed as a rate  $1/2$  turbo  
encoder, during trellis termination of a first of the two  
35 or more constituent encoders; and

transmitting tail output bits from a third  $X'(t)$  output branch and from a fourth  $Y_0'(t)$  output branch, when the turbo encoder is employed as a rate 1/2 turbo encoder, during trellis termination of a second of the two or more constituent encoders.

4. The method of Claim 2 wherein, when the turbo encoder is employed as a rate 1/3 turbo encoder, the step of transmitting comprises the steps of:

10 transmitting tail output bits from a first  $X(t)$  output branch, and a second  $Y_0(t)$  output branch, during trellis termination of a first of the two or more constituent encoders;

re-transmitting tail output bits from the first  $X(t)$  output branch during trellis termination of the first of the two or more constituent encoders;

transmitting tail output bits from a third  $X'(t)$  output branch and from a fourth  $Y_0'(t)$  output branch, during trellis termination of a second of the two or more constituent encoders; and

re-transmitting tail output bits from the third  $X'(t)$  output branch during trellis termination of the second of the two or more constituent encoders.

5. The method of Claim 2 wherein, when the turbo encoder is employed as a rate 1/4 turbo encoder, the step of transmitting comprises the steps of:

transmitting tail output bits from a first  $X(t)$  output branch, a second  $Y_0(t)$  output branch, and a third  $Y_1(t)$  output branch during trellis termination of a first of the two or more constituent encoders;

re-transmitting tail output bits from the first  $X(t)$  output branch during trellis termination of the first of the two or more constituent encoders;

transmitting tail output bits from a fourth  $X'(t)$  output branch, a fifth  $Y_0'(t)$  output branch, and a

sixth  $Y_1'(t)$  output branch during trellis termination of a  
second of the two or more constituent encoders; and  
re-transmitting tail output bits from the  
fourth  $X'(t)$  output branch during trellis termination of  
5 the second of the two or more constituent encoders.

6. The method of Claim 1 wherein the step of  
generating the tail input bits is performed  
simultaneously at each of the two or more constituent  
10 encoders, wherein tail input bits from a first  
constituent encoder are generated at same clock cycles  
from a second constituent encoder.

7. The method of Claim 1 wherein the step of  
15 generating the tail input bits is performed consecutively  
at each of the two or more constituent encoders, wherein  
tail input bits from a first constituent encoder are  
generated at different clock cycles than tail input bits  
from a second constituent encoder.